In the Specification

Applicant presents replacement paragraphs below indicating the changes with insertions indicated by underlining and deletions indicated by strikeouts and/or double bracketing.

Please replace the paragraph beginning at page 1, line 14 with the amended paragraph as follows:

A1

Audio speakers, particularly when being driven at the upper end of their operating range, are subject to failure in at least two ways. First, an excessive drive current applied to the voice coil of the speaker or a high current applied for an excessive time can overheat and burn out the voice coil and/or cause other damage in the speaker. Heating of the voice coil is also a function of the exclosure used for the speaker, ambient temperature, and other factors. Second, speaker cones have a resonant frequency and, for a given drive signal, cone movement will be significantly greater at or near the cone's resonant frequency ~~then~~ than for drive signals at other frequencies. Particularly when a speaker is being driven in its upper operating ranges, additional cone movement caused by resonance can overdrive the cone, causing tearing or other damage thereto and/or to components of the speaker attached to or otherwise moving with the cone.

Please replace the paragraph beginning at page 1, line 24 with the amended paragraph as follows:

A2

Heretofore, the problem of protecting a woofer ~~of~~ or other speaker from overload damage has been dealt with by providing an electrical circuit to monitor current drive to the speaker and generate a feedback control in response thereto and a separate device, generally a low impedance mechanical device such as an accelerometer or secondary sensing coil, to detect cone movement, including movement as a result of resonance, and to generate a separate feedback signal in response to such movement. No mechanism has been provided for directly (or indirectly) measuring/detecting coil temperature and compensating for increases in such temperature. While such overload control/protection circuits for speakers utilizing two separate detection schemes, including the mechanical detection scheme for cone movement, are generally effective for protecting the speakers, this arrangement is relatively complicated and expensive, particularly the mechanical detectors for cone movement, and it would be preferable if a single, all electronic

A2 cancel

circuit could be provided to detect and provide control/protection for both drive-current-induced thermal overload and excessive cone movement resulting from resonance or other causes. It would also be desirable if such circuit could detect heating of the voice coil and compensate for such heating, regardless of cause.

Please replace the paragraph beginning at page 4, line 8 with the amended paragraph as follows:

A3

Referring now to Fig. 2, which is a schematic diagram of the sense resistor 20 and of control voltage amplifier 22, for a preferred embodiment it is seen that amplifier 22 is made up of three differential amplifiers 30, 32 and 34. The signal on line 19, which is passed through ~~sensor~~ sense resistor 20 to speaker 18, is applied directly through resistor R2 to the minus input of amplifier 30 and through ~~sensor~~ sense resistor 20 and resistor R3 to the positive input of this differential amplifier. The output from amplifier 30 is fed back through resistor R1 to the negative input of the amplifier and the positive input to amplifier 30 is connected to ground through ~~resistance~~ resistor R4.

Please replace the paragraph beginning at page 4, line 15 with the amended paragraph as follows:

A4

The two inputs to speaker 18 are connected through resistors R6 and R8 to the negative input and the positive input respectively of differential amplifier 32, this amplifier thus seeing the voltage across speaker 18. The output from amplifier 32 is connected to its negative input through resistor R7 and the positive input to this amplifier is connected to ground through ~~resistance~~ resistor R9. The output from differential amplifier 30 is connected through resistor R10 to the negative input of differential amplifier 34 and the output from differential amplifier 32 is connected through resistor R12 to the positive input of amplifier 34. The output of amplifier 34 is output line 24 from amplifier 22, the output on this line also being fed back through a lowpass filter, formed by capacitor C1 and resistor R11 connected in parallel, to the negative input of differential amplifier 34. The positive input to this differential amplifier is connected to ground through resistor R13.